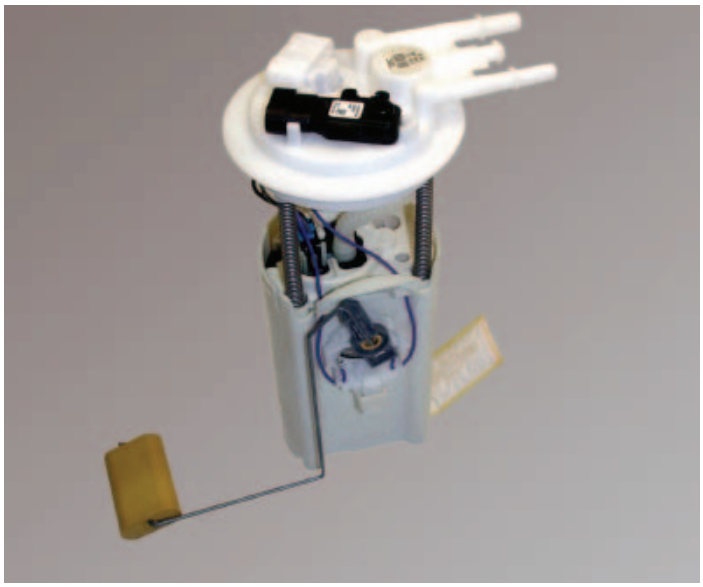
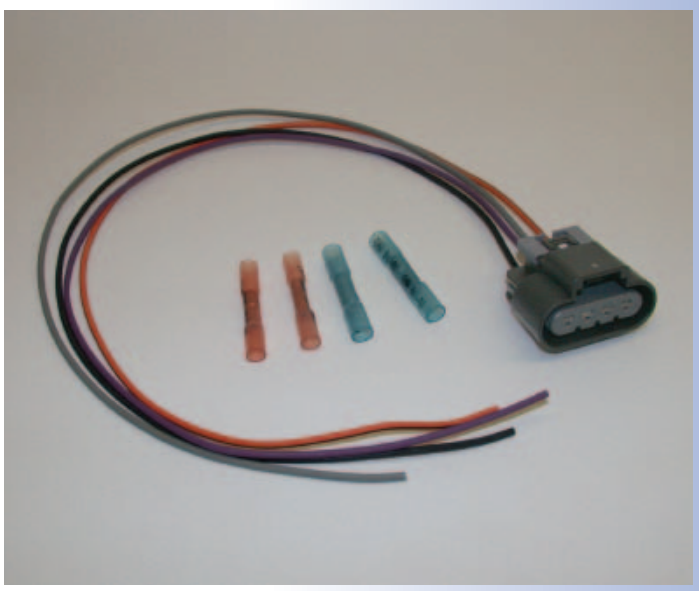
ACDelco
TECHconnect
May/June 2006
Volume 13, No.3

Fuel Module Service





A new fuel module service kit for several full-size GM trucks and SUVs features a number of enhancements that improve the durability and performance of the fuel module.

The fuel module kit (ACDelco part number MU1516, GM part number 19121626) has been designed for 1999-2003 Chevrolet Silverado 1500 and GMC Sierra 1500 models; and 2000-2003 Chevrolet Tahoe and Suburban 1500, and GMC Yukon and Yukon XL 1500 models.

The enhanced kit includes the fuel module, fuel module tank seal, GT 280 connector, fuel pump fuse, four weather-resistant splices, and an instruction sheet.

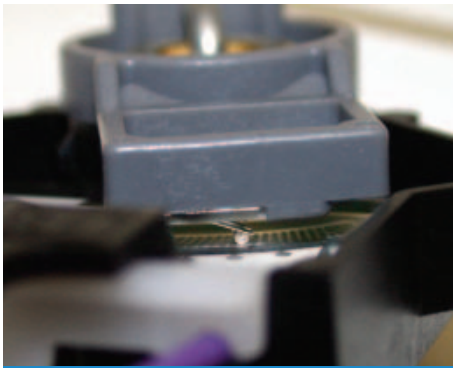
Compared with the previous fuel module, technicians will notice that the new module has a different level sensor and wiper arm along with a different connector. When replacing the fuel module, the new connector will need to be spliced into the truck wiring harness.

Level Sensor

An erratic fuel gauge is one of the conditions found on the affected trucks. There are two items that may cause the irregular fuel gauge readings — poor electrical contact and a contaminated ceramic card in the sensor of the fuel module.

The sheet metal "fingers" used for electrical contact on the wiper arm of the sensor may be prone to wear. In the new module, these fingers have been replaced with "buttons" that have a much thicker wear surface, providing greater durability.

continued on page 2



Rolled buttons on the fuel level sensor

IN THIS ISSUE

Fuel Module Service 1
Air Conditioning Service Seminar 3
Technician of the Millennium IV Regional Semi-Finals 3
Upper Ball Joint Replacement 4
Road Trip Readiness 4
ACDelco Image Graphics 5
TSS Scholarship Winners 5
Brake Bucks Promotion Adds Direct Mail Campaign 6
Sports Report 6
Tech Tips 7
Professional ACDelco Batteries 8
GM Service Information for WIP Users 8

acdelcotechconnect.com

Fuel Module Service –
continued from page 1

Enhanced ink strip on the fuel level sensor

In addition, the sensor's ceramic card features a conductive ink strip that uses a small percentage of silver metal. The silver in the ink strip is susceptible to sulfur contamination found in the fuel. To reduce the chance of contamination, the ink strip now uses noble metal, which is a group of metals not affected by sulfur.

To aid with identification, the wiper arm of the new level sensor is gray instead of black.

Electrical Connections

The chassis electrical connector is the interface between the truck wiring harness and the fuel module. The original module is equipped with a 2x2 Metri-Pack 150 electrical connector on the top of the fuel module.

Over time, this connector may develop excessive electrical resistance due to fretting and/or incorrect diagnostic probing of the terminals, leading ultimately to connector failure.

Fretting is a microscopic rubbing motion between the terminal pins in a connector, usually caused by vibration and electrical harness movement. The result is that oxidized debris (corrosion) can build up in the terminals, causing the high resistance or a loss of continuity.

Metri-Pack 150 connector on module

The gray Metri-Pack 150 connector has been updated with a white 1x4 GT 280 connector that features a more robust design that is less likely to experience fretting and excessive resistance.

GT 280 connector on module

Connector Replacement

When replacing the chassis connector, stagger the cuts of the four leads on each harness by 1.5 inches (40 mm) so the splices will not overlap. Then match the appropriate colors and align the leads so the repaired harness will be the same length as the original.

Splice the new GT 280 connector to the vehicle harness using the four butt splices in the kit. Use the blue splices on the black and gray leads and the red splices on the purple and orange/black leads. Crimp the splices with the appropriate crimp tool.

Use the appropriate test probe to check the connector after splicing

After crimping, shrink the insulation of the splices using a heat gun until a small amount of sealant comes out of both ends of the tube.

To check the integrity of the splice, use the appropriate test probe. Do not insert test equipment probes, or test probe substitutes such as paper clips, into the connector. These items could deform the terminals and cause a poor connection.

– Thanks to Charley Gipe

ACDelco TECHconnect

ACDelco *TechConnect* is published bi-monthly for retail technicians to provide timely service information, increase knowledge and improve the performance of the TSS service center.

Publisher:
Dennis Kissack
ACDelco
E-mail
dennis.c.kissack@gm.com

Editor:
Mike DeSander
ACDelco
E-mail
mike.desander@gm.com

Technical Editors:
Mark Spencer
E-mail
Mark_D_Spencer@adp.com

Jim Horner
E-mail
Jim_Horner@adp.com

Production Manager:
Marie Meredith

Desktop Publishing:
Supreme Graphics, Inc.
E-mail
supremeinc@supremeg.com

Write to:
ACDelco TechConnect
P.O. Box 500
Troy, MI 48007-0500

On the Web:
acdelcotechconnect.com

ACDelco service tips are intended for use by professional technicians, not a "do-it-yourselfer." They are written to inform those technicians of conditions that may occur on some vehicles, or to provide information that could assist in the proper service of a vehicle. Properly trained technicians have the equipment, tools, safety instructions and know-how to do a job properly and safely. If a condition is described, it cannot be assumed that the information applies to all vehicles or that all vehicles will have that condition.

All materials and programs described in this magazine are subject to change. Submission of materials implies the right to edit and publish. Inclusion in the publication is not necessarily an endorsement of the individual or the company.

TechConnect is published for ACDelco by Sandy Corporation, Troy, MI.

©2006 ACDelco. All rights reserved.

Air Conditioning Service

What You Don't Know May Cost You!

Investing your time in training seminars in this day and age involves a trade-off for many technicians and service center owners. Time is a commodity in short supply and attending a two or three hour training session on your own time requires an answer to the age old question, "What's in it for me?"

ACDelco understands this question as well as the high value of time in the service center. Technicians and service center owners need information about service issues that will provide them with numerous returns in their daily work of servicing customers, while at the same time providing a respectable return for that work.

To meet this need, the ACDelco Emerging HVAC Technology and Service Issues seminar (SS AC-01.04) was revised for 2006 to provide concise service tips to help locate and repair air conditioning problems quickly and correctly the first time.

A/C Systems Changing

The automotive air conditioning OEM industry has been moving quickly these past few years. The release of hybrid vehicles with unique A/C system requirements and enhanced R-134a systems with special needs require that technicians update their skills to avoid costly repair or safety issues. Legal issues regarding environmental items in several U.S. states and Canadian provinces carry fines that could significantly affect the pocketbook of both technicians and service center owners.

Worldwide, the global cost of refrigerant has become a hot commodity. Updates on availability, costs, and alternate refrigerants are reviewed in the seminar. Find out what U.S., Asian and European manufacturers are developing for the near future.

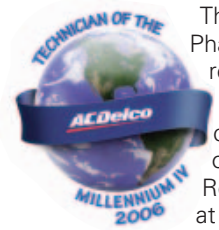
The seminar also covers new specialized tools and repair parts that are designed to perform repairs faster and at a lower cost while offering the same or higher quality and reliability.

Obtaining technical information takes time. A concentrated 2–3 hour investment of your time to obtain a current synopsis of the A/C industry, tools, techniques, and regulations is a small investment that many have found greatly pays for itself within the first few customers of the air conditioning season.

Check with your local WD to determine when the Emerging HVAC Technology and Service Issues seminar will be held in your area.

– Thanks to Jim Resutek

Technician of the Millennium IV Regional Semi–Finals Up Next



The 2006 Technician of the Millennium Phase II winners are gearing up for the regional semi-finals taking place May 8-12.

In February, the top five scoring technicians on the Internet-based test in each of the ACDelco Regions advanced to the Regional Semi-Finals, which will be held at the GM Heritage Center in Sterling Heights, Mich.

The Phase III Regional Semi-Finals is a "hands-on" technical skills competition. Semi-finalists from the same region will compete against each other. Winners will be announced immediately after the competition.

Finals at the ACDelco National Convention

The regional winners will be off to Las Vegas for the National Hands-on Finals that will take place during the ACDelco National Convention in October.

The "best of the best" ACDelco technicians will put their knowledge and skill on the line. The technician who demonstrates the greatest professionalism and accuracy in diagnosing and repairing actual vehicles during the timed "hands-on" technical skills finals will be the next Technician of the Millennium.

The grand prize for the National Finals winner includes a 2006 GM vehicle, Interior/Exterior Image Enhancement for the TSS service center, a Winning Adventure trip for the winner and a guest and the TSS shop owner and a guest, and a commemorate trophy.

ACDelco wishes all of the contestants the best of luck.

– Thanks to Todd Dawn

2006 Technician of the Millennium Phase II Winners

U.S. regional semi-finalists include:

Western Region

William Edelbrock — Ron's Automotive Clinic, Inc., Long Beach, Calif.
Richard McLellan — Christians Automotive, Albuquerque, N.M.
Eric Armstrong — Motoring Services, Kennewick, Wash.
Lawrence Nobriga — Salel Automotive Service, San Leandro, Calif.
Tory Thomas — Rigby Auto Service, LLC, Rigby, Idaho

South Central Region

Joe Gandara — Taggart Service Center, Portland, Texas
Derek Fenster — Penner's Tire and Auto Inc., York, Neb.
Bill James — Bill's Quality Automotive, Tulsa. Okla.
Kellan Minich — The Maintenance Shop, Inc., Gladstone, Mo.
Michael Delcambre — Master Mechanics, Inc., New Iberia, La.

South East Region

Paul Freeman — Paces Ferry Exxon, Atlanta, Ga.
Charles McCrary III — Barron Garage, Inc., Atlanta, Ga.
Craig Newsome — Auto Tech, Section, Ala.
Timothy Lasley — Wilson's Garage of Pfafftown Inc., Pfafftown, N.C.
Jennings Strickland — Tiger's Automotive, Raleigh, N.C.

North East Region

Louis Codianna — United Auto Sales and Service, Waterbury, Conn.
David Morgan — United Auto Sales and Service, Waterbury, Conn.
James Testa — JD Automotive & Truck, Dover, N.J.
Charles Apfelbeck — Total Auto Maintenance, Riverdale, Md.
Thomas Seagrave — Sweeney's Garage, Buffalo, N.Y.

North Central Region

Carl Thomas — Lancer Service Inc., St Paul, Minn.
Paul Rabas — Rabas Garage Inc., Maribel, Wis.
John Darrigan — Master Automotive, Inc., Elkhart, Ind.
Scot Manna — MB Automotive Inc., Des Plaines, Ill.
Michael Bohnet — Done Right Auto & RV, Mason, Mich.

Upper Ball Joint Replacement

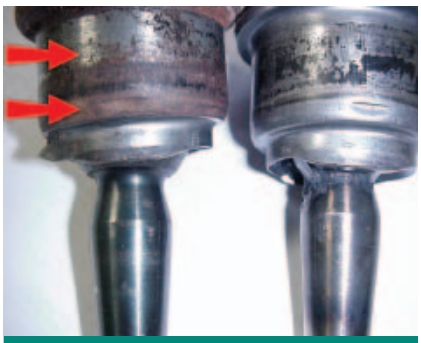
Severe damage has been found on the upper control arms (stamped steel versions) of several GM trucks due to the ball joint hole being stretched out of round during the process of removing the worn upper ball joint.

This condition may apply to 1996-2006 Cadillac Escalade ESV, Chevrolet Avalanche (3/4 ton model), Chevrolet Suburban (3/4 ton model), Chevrolet Silverado (1/2 ton HD, 3/4 ton, and 1 ton models), Chevrolet Express Cab, Hummer H2, GMC Sierra (1/2 ton HD, 3/4 ton, and 1 ton models), and GMC Yukon XL.

In order to avoid premature ball joint wear or control arm failure due to improper installation, the ACDelco upper ball joint (ACDelco part number 45D0104) must have the ball joint housing properly indexed to the existing control arm prior to being pressed in.

Removal and Inspection

The stamped steel upper control arm may be stretched out of round when removing the worn upper ball joint. The control arm hole may measure as much as 0.018 inches larger than the original size.



Inspect ball joint housing for excessive wear

Inspect the old ball joint housing prior to removal from the control arm to determine if excessive wear has caused the control arm hole to become elongated.

Check hole diameter for elongation

Pressing out an old ball joint (with a damaged housing) typically enlarges the control arm hole. The expanded hole does not allow for an adequate mechanical bond between the new ball joint housing and the control arm, resulting in the ball joint not being held securely in place.

Excessive corrosion, or hammering or pressing the old ball joint out at an angle also may damage the control arm.

The hole diameter specification is 45.825mm ±0.025mm or 1.804 inches ±0.001 inches.

Control arm holes that show any signs of wear, fatigue, an oblong shape or other damage must be replaced.

Repair and Installation

ACDelco now offers a complete control arm assembly (ACDelco part number 45D1083) with the ball joint installed.

Control arm assembly with ball joint

If only the ball joint requires replacement, it must be properly indexed to the control arm.

INSTALL INBOARD is stamped on the bottom of the upper ball joint at a right angle to the large flat on the ball joint housing. Install the ball joint with the INSTALL INBOARD facing the engine compartment.

INSTALL INBOARD is stamped on the bottom of upper ball joint

Also, look closely at the ball joint housing and stud. Because the ball joint is a "directional" type, the swing angle of the ball joint stud is limited in its range of motion (inboard-to-outboard).

Incorrect installation may damage the ball joint and cause premature failure.

– Thanks to Dennis Kissack

Road Trip Readiness

As summer nears, many families are getting ready for their annual road trip. A pre-trip vehicle checkup can help ensure vacation plans don't end up sidetracked by a mechanical breakdown. An added benefit is that a properly maintained vehicle achieves the best possible fuel economy.

The Car Care Council suggests sharing these tips with your customers before they take a trip.

Pre-Trip Checkup

Fluids – Check the coolant/antifreeze, engine oil, power steering, brake, transmission and windshield washer fluids.

Belts and hoses – A belt that fails can affect many systems. Cooling system hoses may be deteriorating from within, so carefully inspect hoses and clamps in marginal condition.

Tires – Check tire inflation and inspect the tread for uneven wear, bulges and bald spots.

Wipers – Although climates vary, wipers generally need replacing every six months.

Lighting – Check for properly operating exterior and interior lighting.

Fuel Saving Tips

Vehicle gas caps – Damaged, loose or missing gas caps cause millions of gallons of gas to vaporize every year.

Underinflated tires – When tires aren't inflated properly it's like driving with the parking brake on and can cost a mile or two per gallon.

Worn spark plugs – A worn or dirty spark plug causes misfiring, which wastes fuel.

Dirty air filters – A clogged air filter chokes off the air and creates a rich fuel mixture, which wastes gas and causes the engine to lose power.

New ACDelco Image Graphics Available

ACDelco has expanded their building graphic elements to provide TSS service centers with a new, modern look that will build upon ACDelco's premium automotive parts brand image and help enhance the service center's image.

The new graphics have been designed using the familiar ACDelco red, white and blue color scheme while incorporating an updated appearance that matches ACDelco merchandising materials.

Building Graphics

The updated building graphics can be purchased individually or as kits. The three kits are:

Kit #1 — Office/Retail Area Kit

Kit #2 — Full Shop Kit

Kit #3 — Premium Kit (with on-site consultation)

The graphic elements include:

- Counter graphic
- Wall stripe/border graphic
- Store hours with numbers graphic
- Service bay door graphic
- Enter/exit sign
- Tire wrap

Installation service is included when purchased as a kit, and is recommended for all elements.

Vehicle Graphics

In addition to the updated building graphics, the vehicle graphics are now available at new, reduced prices. Vehicle graphic elements include:

- Van & Minivan Kit (ACDelco logos and customer I.D. kits with decals)
- Pickup & Short Bed Pickup Kit (ACDelco logos and customer I.D. kits with decals)

All elements in the kits also can be purchased individually.

8" x 12" store hours with numbers graphic

24" x 99" service bay door graphic

Recognizable, easy-to-read signs and graphics are an important, part of a business' image. ACDelco's well-known brand tells potential customers that your service center installs quality automotive parts they can trust. Plus, the graphics tie the service center into ACDelco's extensive national advertising programs.

For more details about the ACDelco graphics and other ACDelco Image items, contact your local ACDelco sales representative, or visit acdelcotechconnect.com.

– Thanks to Kim Lukas

15" x 30' wall stripe/border graphic

TSS Scholarship Winners

ACDelco is pleased to announce the winners of the 2005 TSS educational scholarship program. For the seventh consecutive year, ACDelco has awarding 10 nationwide scholarships to help technicians and the dependents of TSS service center owners pursue their careers in the automotive service industry. The scholarships will help cover the cost of college tuition and books.

Technician Winners

The five technicians who have won $2,500 scholarships are:

- John Latuso, Northport, N.Y., sponsored by Freidank Automotive, Greenlawn, N.Y.
- James Sarros, Okeechobee, Fla., sponsored by Autoworks Service Center, Okeechobee, Fla.
- Nicholas Stremer, Minneapolis, Minn., sponsored by Bobby & Steve's Auto World, Minneapolis, Minn.
- Virginia Tompkins, Trussville, Ala., sponsored by Auto & Truck Services, Inc., Birmingham, Ala.
- Joshua Wagner, Mexico, N.Y., sponsored by Dick's Auto of Pulaski, N.Y.

Dependent Winners

The five dependents of TSS service center owners who have won $3,000 scholarships are:

- Kimberly Grove, Hummelstown, Pa., sponsored by Grove Motors, Inc., Middletown, Pa.
- Richard Larcom, Jr., Tampa, Fla., sponsored by Ed Larcom's Garage, Inc., Tampa, Fla.
- Ryan Williams, Chanhassen, Minn., sponsored by Bobby & Steve's Auto World, Minneapolis, Minn.
- Bradley Willson, Kerrville, Texas, sponsored by Central Automotive, Kerrville, Texas
- Garett Wolfe, Missoula, Mont., sponsored by Mike Wolfe Service, Wenatchee, Wash.

2006 Scholarship Application Information

- Application deadline: Scholarship applications must be received by Oct. 15, 2006.
- Applicants are required to:
  - Submit their official high school transcripts
  - Write an essay about their background and future plans in automotive service
  - Provide a letter of recommendation
- The TSS Advisory Council reviews the essays along with applications when selecting the recipients.
- All applicants are required to have a high school diploma or its equivalent.
- Dependent applicants must be enrolled in college full time.
- Technician applicants may attend college on a part-time basis.
- Bonus consideration is given to those seeking professions in the automotive field, although it is not a requirement.

For more information about the TSS educational scholarship program's requirements, selection criteria and submission deadlines, contact your ACDelco representative or visit acdelcotechconnect.com. To download a scholarship application from the website, click on the links to Total Service Support, Employee Retention and then Scholarships.

– Thanks to Dan Carter

2006 Brake Bucks Promotion Adds Direct Mail Campaign

The 2006 DuraStop Brake Bucks promotion will be supported by a targeted consumer direct mail campaign to drive more business to your service center.

The 2006 Brake Bucks Consumer Rebate Promotion will begin June 1, 2006, and run through July 31, 2006. The consumer rebate offers savings of $10 per axle with a $20 per vehicle maximum cash back.

The promotion also includes Winner's Circle game cards for Undercar product purchases from participating ACDelco distributors along with the chance to win a trip to the Bob Bondurant School of High Performance Driving in Phoenix, Ariz. One TSS account in each ACDelco Zone territory will win a trip based on sales of ACDelco DuraStop and Original Equipment brake products.

The Brake Bucks promotion will be supported by a consumer direct mail program run in conjunction with MechanicNet Customer Retention System (CRS). MechanicNet CRS has the ability to integrate with over 120 shop management systems (SMS) to retrieve repair order information to best identify which consumers within your shop database are most likely to require brake service during the promotional period.

Once your high potential customers are identified, MechanicNet will mail the 2006 ACDelco Brake Bucks Consumer Rebate Postcards (up to 250 personalized postcards). After the postcards are mailed, MechanicNet will track who the postcards were mailed to and will begin reporting your Return on Investment (ROI).

Brake Bucks postcard

Promotion Requirements

To participate in the MechanicNet portion of the promotion, service centers will be required to pay, via credit card (EY Rewards is accepted) a $50 licensing fee (waived for active MechanicNet CRS subscribers at the time of promotion). MechanicNet is available only to TSS accounts that meet qualification requirements, which include:

- Be an active U.S. TSS member
- Write repair orders on a compatible computerized shop management system (SMS)
- Have connectivity to dial-up or high-speed Internet access from SMS system
- Have virus and firewall software already installed
- Have at least 2 megs of disk space available on hard drive of SMS computer
- SMS (or DOS SMS) must be running on a Windows computer

Brake Bucks Promotional Alternatives

Service Centers that do not qualify to participate with MechanicNet may contact RJ Conlin, a TSS preferred vendor for traditional direct mail services, using the Brake Bucks promotional postcard.

Visit acdelcotechconnect.com for more details about the RJ Conlin promotional offer or contact RJ Conlin at 1-800-246-9177.

Service centers that would like to mail postcards using their own database may print a PDF image of the postcard and mail according to their own preferences.

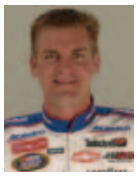
Visit acdelcotechconnect.com for the PDF postcard image.

Keep in mind that ACDelco is not responsible for any fees associated with these Brake Bucks promotional alternatives.

– Thanks to Malcolm Fordyce

ACDelco Sports Report

NASCAR Busch Series Stock Car Racing



Driver:
Clint Bowyer
Car: #2 Chevy Monte Carlo, Richard Childress Racing

Clint Bowyer continues to stay on the heels of the leader in the NASCAR Busch Series.

He finished a close second to Kevin Harvick in the Pepsi 300 at the Nashville Speedway. Harvick took the lead with 52 laps to go and didn't look back. Bowyer challenged late in the race after a caution flag but couldn't quite catch Harvick, trailing by only 0.504 seconds at the finish line.

For the 2006 season, Bowyer has driven the #2 ACDelco car to two top 5 finishes and three top 10s. In May, the series moves on to Richmond International Raceway and the Darlington Raceway.

2006 Driver Standings		Points
After 9 of 35 races		
1.	Kevin Harvick	1469
2.	Clint Bowyer	1180

IHRA Torco Racing Fuels Pro Modified Series Drag Racing

Driver:
Harold Martin
Car: Pontiac Grand Am

Harold Martin got off to a rocky start in the 2006 IHRA Pro Modified Series season.

He had trouble getting down the dragstrip at the Spring Nationals in Rockingham, N.C., and did not run in the elimination rounds.

The 2006 Pro Modified Series heads north in June to the Canadian Nationals in Grand Bend, Ontario, and the Rocky Mountain Nationals in Edmonton, Alberta.

2006 Driver Standings		Points
After 1 of 11 races		
1.	Glen Kerunsky	119
25.	Harold Martin	15

NHRA POWERade Pro Stock Series Drag Racing

Driver:
Kurt Johnson
Car: Chevy Cobalt

Kurt Johnson made it to the winners circle at the SummitRacing.com Nationals in Las Vegas recently.

Johnson (6.842/202.42) beat out Dave Connolly (6.874/202.00) for the win. It was the 62nd final round of his career.

Before matching up with Connolly in the finals, Johnson eliminated three tough competitors in Mike Edwards, Erica Enders in the second round, and Jason Line in the semifinals.

Johnson hopes to continue his winning ways as the 2006 season schedule heads on to the Southern Nationals in Atlanta, Ga., and the Pontiac Performance Nationals in Columbus, Ohio, in May.

2006 Driver Standings		Points
After 5 of 23 races		
1.	Greg Anderson	369
10.	Kurt Johnson	221

CITGO BASSMASTER Tournament Trail

Angler:
Jimmy Houston

The 2006 CITGO Bassmaster Tournament Trail kicked off with the Southern Sprint in March. The tour features 11 stops scheduled in four sections around the country: The Southern Sprint, The Turn, The Northern Swing, and The Final Charge.

A new four-day catch total weight record was recorded by Preston Clark, who bagged over 115 pounds at the Santee-Cooper Showdown, stop #3 on the schedule.

The tour moves along to the Sooner Run — the first stop on The Turn, the second series on the schedule — at Grand Lake in Grove, Okla. in June.

2006 Angler of the Year Standings		Points
1.	Dean Rojas	1082
102.	Jimmy Houston	400

TECH tips

The following technical tips provide repair information about specific conditions on a variety of vehicles. If you have a tough or unusual service repair, the TSS Technical Assistance Hot Line can help. Call 1-800-825-5886, prompt #2, to speak with a technical expert with the latest OEM information.

Trailer Wiring Harness ID

2003-06 Chevrolet Express and GMC Savana with RPO Z82 and/or UY7

When installing a trailer brake module or trailer connector on 2003-06 Chevrolet Express and GMC Savana models with RPO Z82 and/or UY7, it is necessary to know the location of the harness and the designated use of each wire.

The four-wire trailer brake controller harness is located under the instrument panel on the driver's side, taped to the pass-through main harness, between the park brake pedal and the vehicle brake pedal.

The seven-wire harness assembly is taped together and located in a frame pocket at the driver's side rear-left corner of the frame.

Both harnesses come without connectors.

The following tables include the color of each blunt-cut wire and its purpose.

Four-Wire Harness (Trailer Brake Controller)	
Black	Ground
Red/White Stripe	Fused battery
Dark Blue	Trailer brake feed
Light Blue	Fused stop lamp/CHMSL

Seven-Wire Harness (Trailer Light/Brake Wires)	
Light Green	Back-up lamps
Brown	Parking lamps
Yellow	Left stop lamp and turn signal
Dark Green	Right stop lamp and turn signal
Dark Blue	Electric trailer brakes
Orange	Trailer accessory
White (heavy gage)	Ground wire

Steering Column Squeaks

A squeaking sound coming from the steering column area when the steering wheel is turned on vehicles with rack and pinion steering may be caused by a dry rack seal.

To correct this condition, pull the rack boot off of the side that is squeaking and spray the seal with penetrating lubricant. This should eliminate the noise.

If the noise persists and you are sure that the seal is at fault, replace the seal. Before installing the new seal, lubricate the seal lips with grease. Make sure that the boot is properly located before reinstalling the boot and clamp.

Intermittent Steering Assist

1999-2004 Ford F350, F450, F550

Owners of some 1999-2004 Ford F350, F450, F550 trucks may notice that the steering wheel feels intermittently stiffer after driving over potholes or bumps in the road.

The combination of steering geometry, vehicle loads, potholes and/or road bumps may cause this condition. The driver could feel this instantaneous condition for a very short time just after hitting the road irregularity. The steering system will then return to its normal performance.

Do not replace the steering gear for this condition. Refer to the diagnostic chapters in the service manual and check the steering gear performance.

If the steering gear is performing according to specification, install a steering damper. Ford introduced the steering damper on these trucks to help reduce wheel fight possibility and help control the steering linkage.

Refer to Ford technical bulletin # 03-17-4 for installation procedures and additional information.

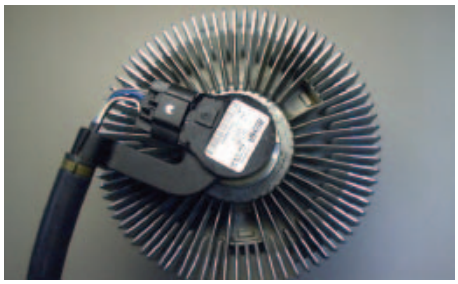
Electro-Viscous Fan Clutch Characteristics

2002-06 Chevrolet TrailBlazer, GMC Envoy, Oldsmobile Bravada, Buick Rainier and Saab 9-7X with the 4.2L I6 or 5.3L V8 engine

2002-06 Chevrolet TrailBlazer, GMC Envoy, Oldsmobile Bravada, Buick Rainier and Saab 9-7X SUVs with either the inline 6 or V8 engines are equipped with an electro-viscous (EV) fan clutch. Specific operating characteristics and diagnostic information are available in the Service Information and on your scan tool. For example, the scan tool data list shows requested and actual EV fan clutch speeds.

The requested fan speed can be much higher than what is shown for actual fan speed. If this is misunderstood, it can lead to replacement of the fan clutch when in fact it is operating as intended.

The requested fan speed is the **highest desired output** from multiple parameters within the PCM (such as engine coolant temperature, A/C pressure, transmission temperature). The highest parameter, however, may not be the ruling parameter, and the requested fan speed display can be significantly higher than the actual fan speed display.



Depending on the model, the EV fan speed can be manually controlled with the scan tool in the Powertrain Special Functions section. It is possible in this mode to set the requested fan speed higher than the vehicle is capable of producing. For example, 2000 rpm can be manually requested while the engine is at 1000 rpm, and 2000 rpm will not be set until engine speed is increased.

Additionally, the fan clutch is by nature slow to respond to scan tool commands or a fused jumper wire test. If the Service Information diagnostics are not followed properly, it can lead to unnecessary EV clutch replacements.

Changes to the EV fan clutch to improve HVAC performance will increase airflow in certain conditions. It is possible during startup for the EV fan clutch to be engaged (depending on check valve orientation) and the EV fan may match engine speed for about one minute, depending on driving speeds. Lower speeds will have a longer engagement time.

If the engine is shut off after a high cooling load drive cycle (E/V full on), the restart will occur with the fan making noise, which some customers may interpret as low engine power and/or transmission slipping.

Vehicles parked upward on an incline of 16% or greater (such as vehicles coming off transport, or parked on a steep driveway) can have an extended amount of fan noise. Once the vehicle is not parked under these conditions, the fan should operate as described. Do not replace EV fan clutches for these conditions, which are normal. If the fan clutch is truly operating at a speed higher than intended, a DTC P0495 or P1484 should set.

Professional ACDelco Batteries — New Look, Better Warranty

ACDelco has introduced a new look on select Professional battery models, while at the same time extended the free replacement period on Professional 6-year and 7-year batteries to be the best in the industry.

Accessible Maintenance Free Design

The updated look of select Professional batteries features a new design called Accessible Maintenance Free. This differs from Sealed Maintenance Free solely with the ability to allow the vent caps to be removed.

The entire ACDelco lineup is:

- Built to ACDelco specifications
- Built using calcium/calcium technology, "The Hallmark of Maintenance Free Technology"
- 100% pressure tested to ensure heat seal of battery cover
- 100% electrical short tested
- 100% current tested to ensure internal welds

There is no difference in quality, performance or application coverage. ACDelco batteries continue to be the Original Equipment product installed in GM vehicles. Some of the GM OE batteries to share this new look are the 86-6YR found in the Chevrolet Corvette and the 90-6YR installed in the Chevy Cobalt.

Free Replacement Limited Warranty

ACDelco Professional 6-year and 7-year batteries now carry the best free replacement limited warranty in the industry. The new warranty went into effect April 1, 2006.

The free replacement limited warranty period for ACDelco 6-year batteries has increased from 18 months to 30 months.

The free replacement limited warranty period for ACDelco 7-year batteries, previously 24 months, is now 50 months.

A number of studies indicate that the free replacement warranty period is an important consideration for consumers when purchasing a battery. Extending the free replacement limited warranty on the Professional 6-year and 7-year batteries is yet another reason to choose ACDelco.

ACDelco Professional batteries are available for a wide variety of applications, from small passenger vehicles to SUVs.

GM Service Information Subscription for WIP Users

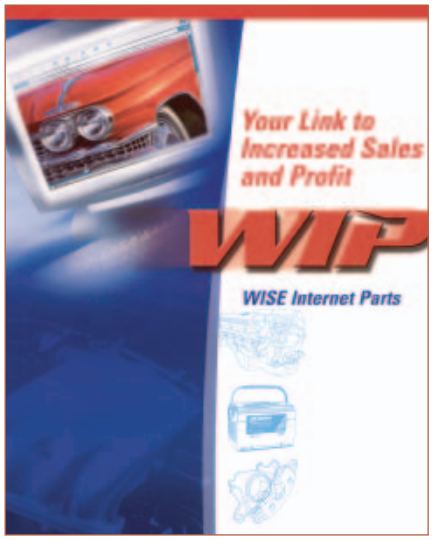
GM Service Information is available to TSS service centers as an Internet-based subscription service.

The Service Information can help technicians with diagnostic and repair information on GM vehicles, including:

- Vehicle diagnostic and service repair manuals for GM vehicles from 1998 to present
- Campaigns, Service Bulletins and Preliminary Information for GM vehicles from 1980 to present
- GM Owner's Manuals and Glove Box Supplements from 2003 to present

Now this information is available at no charge to ACDelco WISE Internet Parts (WIP) users. WIP is a Web-based application that lets ACDelco customers check inventory and order parts online anytime from WISE-enabled ACDelco Warehouse Distributors, providing fast parts access and comprehensive parts cataloging.

Qualifying WIP users who purchase $3,000 of ACDelco products within a calendar month will receive the Service Information the following month at no additional charge. In order to participate in the promotion, service centers must be a registered WIP user and meet the purchase requirements.



WIP Offers More

Along with the no-charge Service Information offer, WIP has been expanded with additional language options — all of which is designed to help make service center owners' and technicians' jobs easier.

Now available in Spanish and French, the WIP electronic parts catalog and ordering program offers greater efficiencies, saving Spanish- and French-speaking technicians and counter persons time translating information and helping reduce potential errors due to language barriers.

The WIP screens can be displayed in English, Spanish or French by clicking on the "Tools" tab from the main screen and selecting the language preferred. Any of the three available languages can be chosen as the default language so it has to be selected only once.

WIP also has been further expanded with a new version specifically designed for the Collision segment of the marketplace. Collision is a large market, and Collision WIP is geared toward body shops to make finding and ordering the right hard parts simple.

To learn more about WIP, call 1-800-825-5886, prompt #3, visit acdelcotechconnect.com, or contact your local ACDelco representative.

– Thanks to Steve Sigg